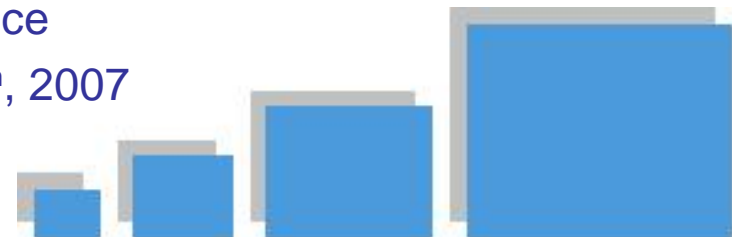




Latest trends and issues in regulation and roll out of DTT in Europe Two case studies

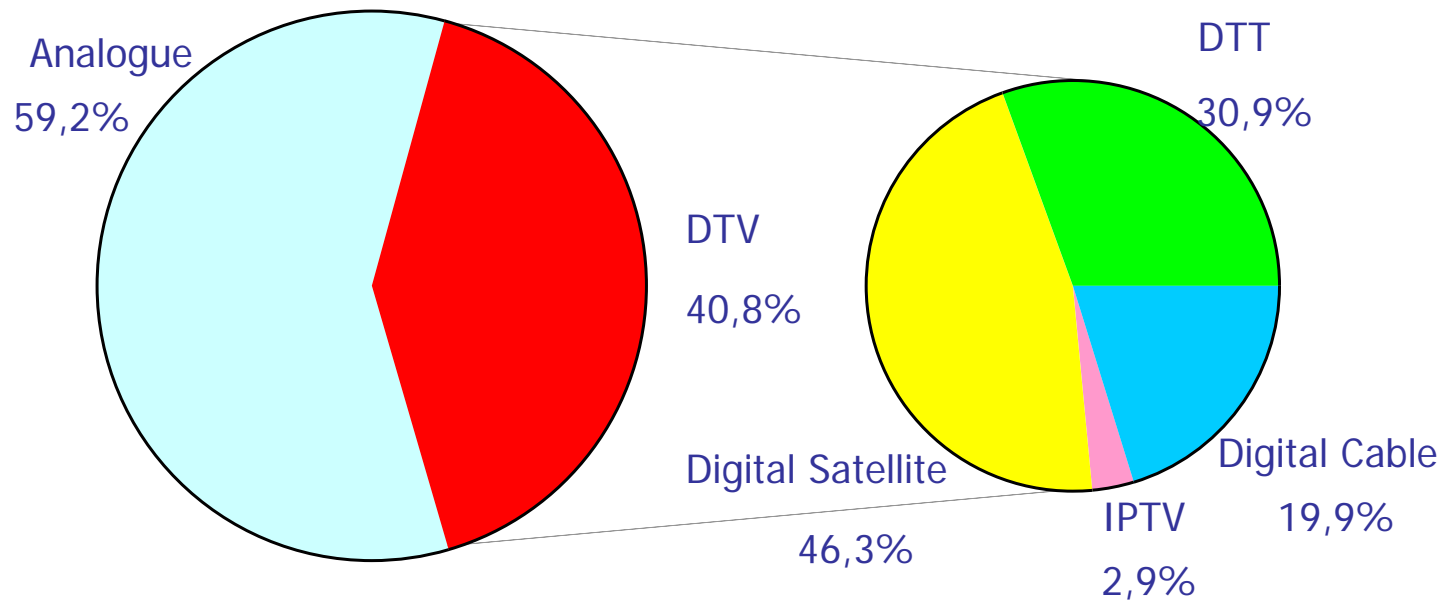
Giulia Berni
ITMedia Consulting

DTT Forum Conference
Sarajevo, September 20th, 2007



Digital TV

Breakdown of WE TV households per technology 2006



Source: © 2007 ITMedia Consulting

Digital Terrestrial TV European overview

DTT second digital platform

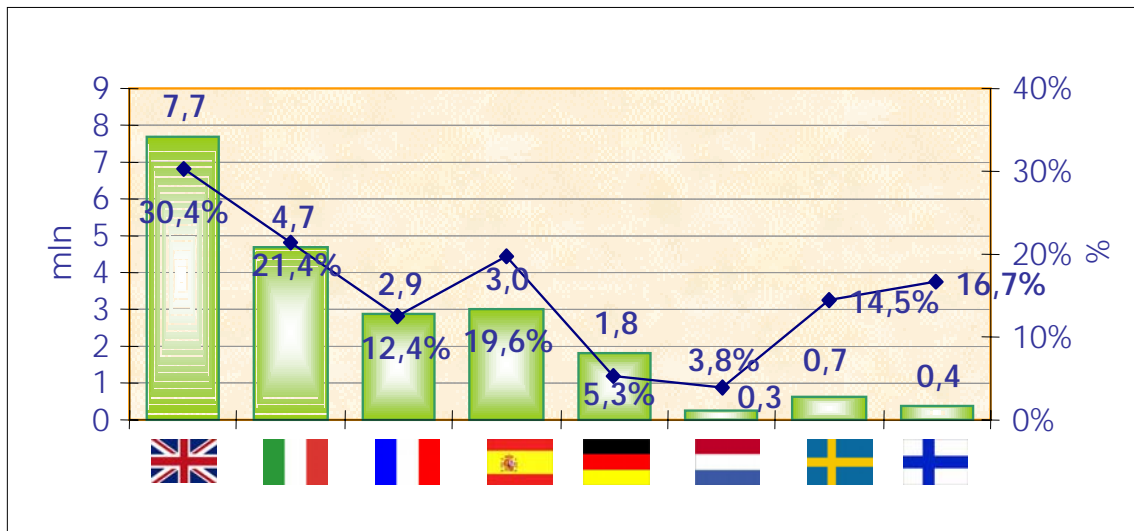
In the UK, DTT passed satellite in terms of users

Netherlands: switch off took place in December 2006

Finland: switch off on 31 August 2007 even though not all sub-transmitters have been digitised

Germany: DTT passed digital cable – DTT has increased the share of terrestrial reception

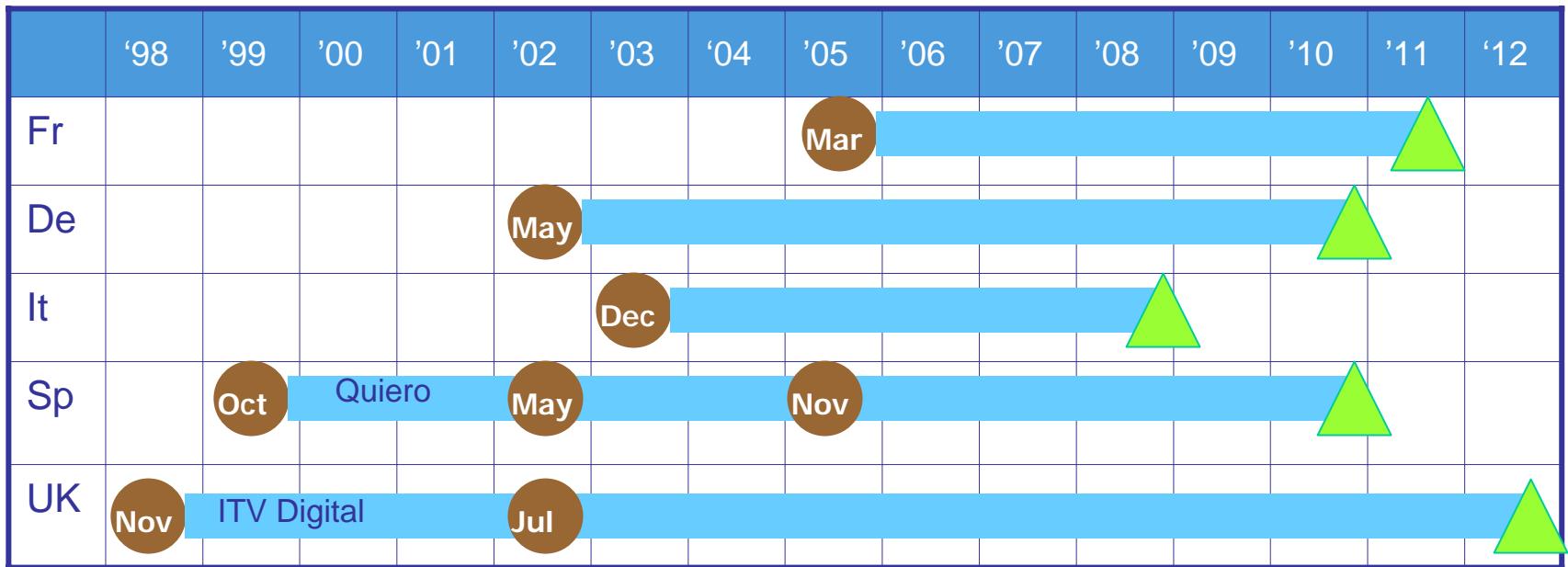
DTT households in some European countries 2006



Source: © 2007 ITMedia Consulting

The switch over process

European Switch off planned in 2012

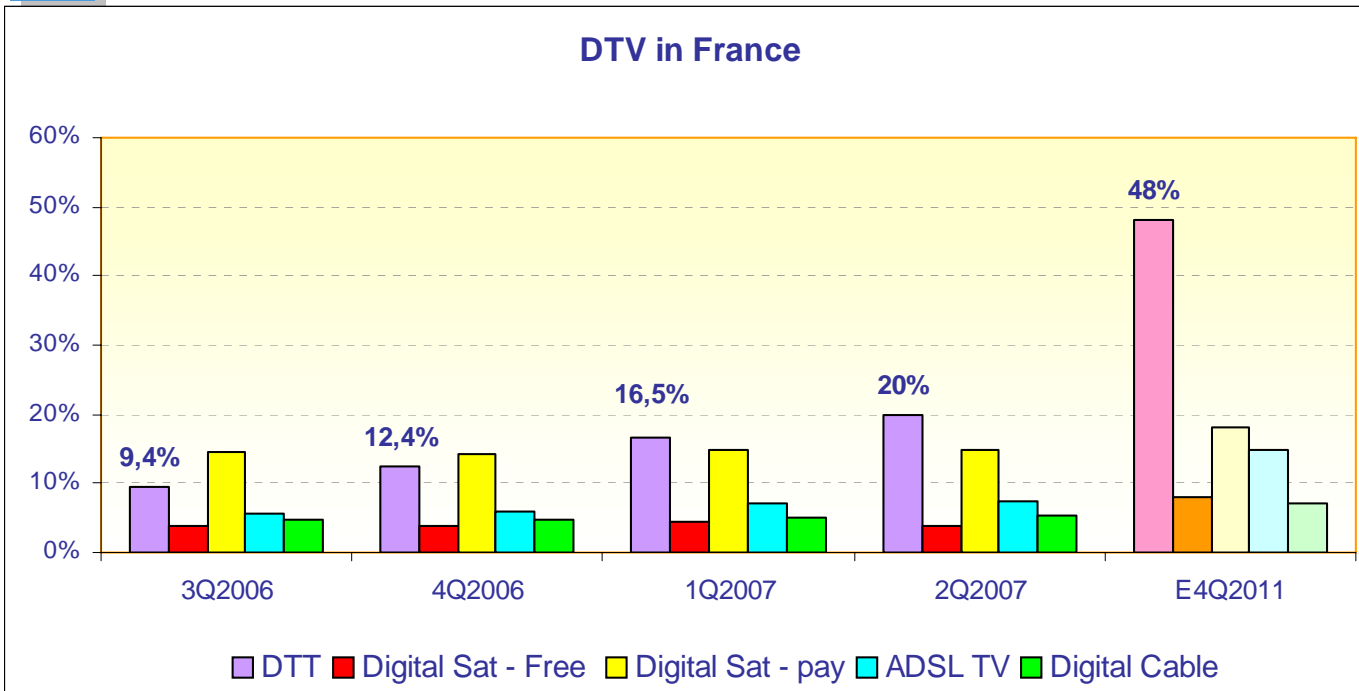


● DTT Launch/Relaunch

▲ Switch off

DTT in France

DTV in France



Since the launch of DTT services in March 2005, 8.2 million DTT receivers are now in French households

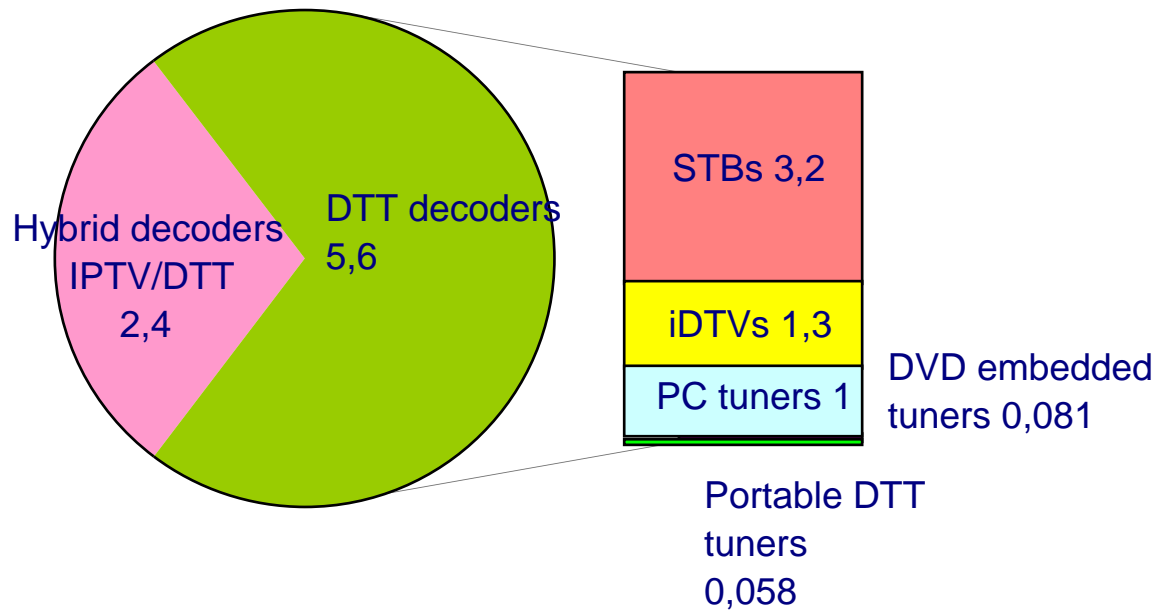
More than 5 million French households are equipped with at least a DTT tuner.

Data processed by ITMedia Consulting

In June 2007, nearly 40% DTV households in France
DTT is the driver of digital access growth

DTT penetration reaches 20%

Million of DTT decoders in France 1Q2007



Source: Gfk

The DTT offer: 29 channels

Free to Air channels

| Channel | Genre | Channel | Genre |
|--------------|-------------------|-----------|------------------------|
| France 2 | <i>PSB</i> | Direct 8 | <i>Minigeneraliste</i> |
| France 3 | <i>PSB</i> | NT1 | <i>Entertainment</i> |
| France 4 | <i>PSB</i> | W9 | <i>Music</i> |
| France 5 | <i>PSB</i> | TMC | <i>Mainstream</i> |
| ARTE | <i>PSB</i> | NRJ 12 | <i>Entertainment</i> |
| TF1 | <i>Mainstream</i> | BFM TV | <i>News</i> |
| M6 | <i>Mainstream</i> | I> Télé | <i>News</i> |
| LCP | <i>News</i> | Europe2tv | <i>Music</i> |
| Public Sénat | <i>News</i> | Gulli | <i>Kids</i> |

18 FTA channels:

- ✓ 6 simulcast
- ✓ 4 already transmitted via DTH and cable or locally
- ✓ 8 new channels specially created for DTT transmission

Pay channels

| | |
|-------------------|-------------------|
| Canal + | Canal+ Le bouquet |
| Canal + Cinéma | |
| Canal+ Sports | |
| Canal J | |
| Planète | |
| Europsport France | Minipack CanalSat |
| Paris Première | |
| LCI | |
| TF6 | |
| TPS Star | TPS seule |

For all packages:

deposit €75, entry fee €40, €8/month
decoder rental

- ✓ Canal+ Le Bouquet €31.90/month
- ✓ Minipack CanalSat: €9/month
- ✓ TPS seule: €18.90/month

DTT Audience

Compared with all TV households, in DTT households:

- People watch more TV
- Terrestrial analogue channels lose appeal: 75.9% vs 84.8%

| Jan-Mar 2007 | Daily reach % | Audience share % | | Daily reach % | Audience share % |
|--------------|---------------|------------------|-------------|---------------|------------------|
| TF1 | 73.1 | 28.5 | TMC | 32.1 | 3.5 |
| France 2 | 65.3 | 17.2 | NT1 | 32.6 | 2.5 |
| France 3 | 61.8 | 12.2 | NRJ12 | 29.7 | 1.3 |
| Canal + | 32.6 | 2.6 | France 4 | 27.2 | 1.1 |
| France 5 | 43.6 | 3.7 | BFM TV | 24.0 | 0.7 |
| M6 | 54.6 | 10.2 | I > Télé | 24.0 | 0.9 |
| Arte | 40.6 | 1.5 | Europe 2 TV | 23.3 | 1.6 |
| Direct 8 | 28.9 | 0.7 | Gulli | 25.5 | 3.7 |
| W9 | 35.3 | 3.2 | Other | - | 4.9 |

Source: Mediametrie

Reach: percentage of people who have had at least a contact during the period output.
Base 100 = 9 790 000 individuals aged >4

Legal and regulatory framework

Switch off 30 November 2011

Existing broadcasters on terrestrial networks can re-transmit their programmes on digital terrestrial networks [simulcast]. This provision applies to TF1, M6 and Canal Plus. They can also broadcast a second channel, but only as a different legal entity

Public service broadcaster enjoys a priority access right to digital frequencies, in order to simulcast its 5 channels and, in case, 3 more channels it will deploy under its public service duties

New licences are granted following a beauty contest, after the CSA has published a list of available frequencies

So far, 12 licences for new FTA channels and 4 pay TV channels have been issued. 9 channels were already on air on other networks

Legal and regulatory framework

Priority is given to national channels

Beauty contest – selection criteria: priority is given to projects engaging in max coverage, respect of quotas, pluralism, financial viability, technical coherence with other projects, ad-supported

Free to air channels were licensed first, bouquet launched on 31 March 2005

11 Pay TV channels followed later, with launch in Autumn. MPG4 standard is required

Local DTT: first beauty contest in 2006 for the Paris region, licences granted in July 2007, 25 channels expected to launch by the end of the year. Simulcast of the existing local channels asking for that

Players in the DTT market

CONTENT EDITOR

It assembles programming under a unique brand

SERVICE DISTRIBUTOR

It provides an offer of audiovisual services to the public via electronic communications networks following contract with the broadcasters or other distributors

MULTIPLEX OPERATOR

It assembles frequencies and ensures technical distribution of programmes

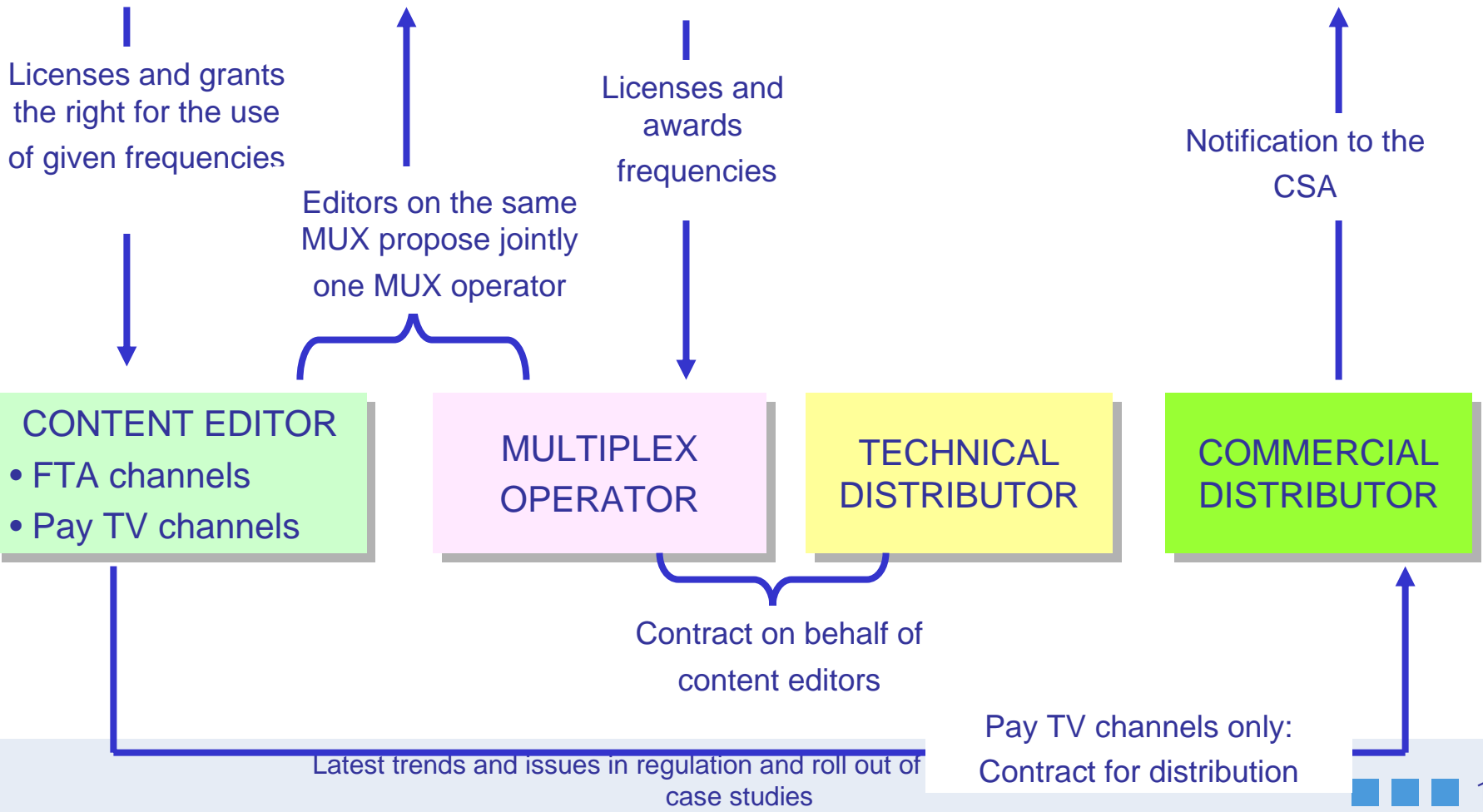
COMMERCIAL DISTRIBUTOR

It markets at a retail level broadcasters' channels

All these entities must be legally different, but they can belong to the same owner

DTT: Licensing procedure

CSA



DTT: Spectrum management

Unlike most countries, in France it's the content editor that holds the rights of use onto frequencies. In this way, **THERE'S NO DEPENDENCE RELATIONSHIP BETWEEN BROADCASTER AND MUX OPERATORS.**

The CSA is in charge for the planning of frequencies.

1. Call for tender for DTT channels
2. Candidate submits a proposal as for:
 - frequencies to be used
 - technical/commercial grouping with other candidates
 - choice of a MUX operator
3. The Conseil Supérieur de l'Audiovisuel CSA grants the rights for the use of radio spectrum to the winning editors, taking into consideration coherent proposals. These rights on definite frequencies are attached to the channel license. More frequencies are awarded to editors as they get available
4. Broadcasters join into groups and chose as their multiplex operator a separated legal entity
5. The CSA licences the MUX operators and grants them the frequencies assigned to each channel

Multiplex composition

| R1 Société de gestion du réseau | R2 Nouvelles télévisions numériques | R3 Compagnie du numérique hertzien | R4 Multi 4 | R5 SMR6 |
|--|--|---|-----------------------|---------------------|
| France2 | I-Télé | Canal+ | M6 | TF1 |
| France3 | BFM TV | Canal+Cinéma | W9 | LCI |
| France5 | Direct 8 | Canal+ Sport | TF6 | Eurosport F. |
| ART | Gulli | Planète | Paris Première | NRJ 12 |
| LCP/Sénat* | Europe2 TV | Canal J | AB1 | TMC |
| | France4 | TPS Star | NT1 | |

*LCP and Sénat share the same frequency

In bold, pay channels

Source: CSA

DTT coverage schedule

| End year | Population coverage national target | Minimum regional target |
|----------|-------------------------------------|-------------------------|
| 2008 | 89% | 75% |
| 2009 | 92% | 85% |
| 2010 | 93% | 89% |
| 2011* | 95% | 91% |

* The remaining part of population will be covered by satellite reception.

Source: CSA

Multiplex operator's obligations

Multiplex operators must apply fair, reasonable and non discriminatory conditions to content providers as for the use of frequencies, even in case new broadcasters are licensed and allowed in the multiplex

The CSA is responsible for the composition of MUXs

Must carry

The 6 national analogue channels are already available on cable networks through the “*service antenna*”, at no extra cost for families, except marginal costs for installation and network adjustments or by subscription, packed with other channels

With DTT, the new Service Antenna, channels is as follows:

- On analogue cable: only the 6 national channels *plus* Canal+ [the FTA programming]
- On digital cable: all 18 DTT channels *plus* Canal+ [the FTA programming]

1.6 million households watch TV via *service antenne*

For multichannel bouquets, must carry rules apply only to PSBs



Under Act 308-2007, all free DTT channels must make their programming available to at least one common satellite distributor. This offer must not be submitted to a subscription nor linked to decoder rental. TNT Sat was launched in June 2007 . It is distributed by Canal+

Underlying principles:
freedom of communication and support to the switch off

Other initiatives

Digital Strategic Committee established by the President of the Republic

- Draw up a plan for a quick transition to DTV
- Outline a strategy for the digital dividend

Digital Fund: initially €15mln to support disadvantaged people

Communication campaign by the Government to spur iDTV sales

The reasons of DTT success in France

QUALITY

Good quality of the digital signal. Frequencies are planned gradually by the CSA

Most channels have large budgets, so that they can offer high quality programmes. Ex: TMC: €27mIn; NT1: €25mIn; i>Télé: €37mIn; Gulli: €16mIn

DTT has the cheapest pay TV offer in the French market

QUANTITY

Sudden increase in the number of available channels: from 6 to 18. Simultaneous launch of all new FTA channels contributed to the reliability of the platform. MUXs groups channels rationally

AVAILABILITY

Digital signal covers 70% population. Planned 80% by year end

All DTT free-to-air channels are available via satellite
TNT Sat was launched in June 2007

Must carry on cable networks.
IPTV offers include DTT channels. Hybrid decoders

DTT in the Netherlands

The influence of the existing audiovisual landscape

In countries with strong existing analogue terrestrial or other platform offerings (cable or DTH), DTT can differentiate itself by means of technology improvements

In the case of Germany or the Netherlands, consumers have had access to a variety of FTA or low- cost cable content even before the introduction of DTT

In entering such a market environment, DTT has had to provide a comparable multi-channel offering. However, in these countries, it was first promoted on the grounds of portable reception [specially boats and caravans]

TV reception in the Netherlands

In the Netherlands only 1.5% of households (~74 000) rely exclusively on analogue TV transmission, although around 3.1% (~220k) use a second TV set with roof antenna [outside home]

93.4% or 6.5 mln households subscribe to a cable offer, while 7% or 0.5 mln households have a satellite dish

The low-level of viewer dependency on the analogue terrestrial platform has made analogue switch-off easier, but may have set some business problems to the DTT provider, that had to find room in a crowded multichannel environment

Licensing DTT

Licences for allocation of DTT spectrum are awarded by the Government

One licence – covering one MUX, is reserved to PSB => awarded to NOS

One licence - covering 4 of the 5 MUXs is to be granted to a commercial operator on the basis of a beauty contest => awarded to Digitenne as only applicant

MUX OPERATOR DEFINES THE LINE UP AND THE BUSINESS MODEL. Channels are not selected by NRA

At least 80% of the capacity is to be allocated for broadcasting traditional TV programmes. The remaining capacity may be used for data services and other broadcasting services.

Licences are granted for a period of 15 years, to allow cost recovery

Licences were awarded on January 31, 2002, services were launched in April 2003

DTT offer

| Channel | Genre | Channel | Genre | Channel | Genre |
|------------|------------|----------------|--------------|------------------------------------|---------|
| Nederland1 | PSB | Jetix/Veronica | Kids/Drama | Animal Planet | Docu |
| Nederland2 | PSB | RTL8 | Entert. | Eurosport1 | Sport |
| Nederland3 | PSB | Éèn | Entert. | BBC Prime | Entert. |
| RTL4 | Mainstream | Canvas/Ketnet | Culture/Kids | BBC World | News |
| RTL5 | Entert | Nickelodeon | Kids | CNN | News |
| SBS6 | Entert | MTV | Music | Regio TV | Local |
| RTL7 | Lifestyle | TMF | Music | Private Spice* | Adult |
| Net5 | Entert | Discovery Ch. | Docu | Live Voetbal1/ Nostalgienet** | Sport |
| | | | | Live Voetbal2/ Planet Voetbal** | Sport |

*Free, it can be blocked by parental control
 **€6/month Source: Digitenne

Digitenne offers 23 TV channels, 19 radio stations and local broadcasters, for a €9.95 monthly fee + €14.95 entry fee
PSB is available FTA

Digitenne achievements

At the end of 2006, DTT operator Digitenne had 265 000 subscribers, and it ended Q2 with 337 000 TV subscriptions. Half million subscribers expected by 4Q2007. Gaining 25 000 subs/month

KPN's new service of Dutch Premier League football (Tele2 Voetbal) for its 'Digitenne' customers has attracted more than 15 000 subscribers on the same period

The successful analogue switch-off in the night of 10/11 December 2006 has made frequencies available for KPN to roll out its nationwide DVB-T network

Coverage requirements

Frequency assignments are based on the requirement to achieve portable indoor reception for at least 70% of the territory. As far as possible SFN are applied. The frequency plan uses channels of Band IV and V.

DVB-T frequencies are chosen on the following basis:

- Non interference basis

- Unused analogue television assignments

- One or more the channels above 60

- “Gaps” in the spectrum

- Operational analogue channels after analogue switched off

Due to the geographical situation and to availability of some unused analogue frequencies, five MUXs for portable indoor reception could be planned in the Randstad [western part of the country]

One MUX with limited coverage is available for most of the country. Only after analogue television has been switched off, six MUXs will be available in the whole country.

DTT: Policy principles

Digitisation must be mainly market-driven.

The Government is responsible for compliance with conditions and a favourable climate of investment

Great importance to competition among broadcasting networks.

The introduction of DTT increases consumer choice

DTT helping to solve spectrum scarcity problems

Digitisation = the most important means of enabling the development of new and innovative services

Before switching off analogue transmissions from the public broadcaster there has to be a digital alternative available

PSB is required in any case to broadcast programmes on terrestrial networks. PSB must be available free of charge

DTT has proved a viable alternative to cable television because of the combination of public and commercial television and additional new digital services

The frequencies for commercial use are meant to be used for programme offers that compete with cable programme offers

Digitenne's pay TV offer does not compete directly with DTH, because it is priced so close to cable charges that most Dutch households consider it as a normal utility-like expense

Terrestrial reception is now higher than it was before going digital

A few words about Finland

Basic facts

DTT launched in August 2001. Switch off on September 1, 2007

Around 780K households to be converted ~ 35% TV households

Analogue transmission: 2 PSB channels, 2 commercial channels

DTT: 30 channels, including 2 pay TV bouquets, 7 radio channels

4 MUXs

- MUX A&B cover 99.9% of population

- MUX C covers 90.4% of population

- MUX E will cover 80% of population by October

Households not covered by DTT can opt for a DTH offer by Canal Plus at €50 one off fee

A €400K scheme was set to provide assistance to 7 000 elderly citizens

DTT legal framework

Different licences for network and programming

The Government is responsible for spectrum management

Licences are open to applications and FREQUENCIES ARE GRANTED BY THE GOVERNMENT TO CHANNELS. MUX OPERATOR IS JUST A COORDINATOR AND A CARRIER

Fee for the use of analogue spectrum by commercial broadcaster is halved in order to promote DTT investments

Fee for the use of digital spectrum not collected until 2010

Capacity on the MUX must be sold at cost oriented price

The network licence, awarded to Digita, entitles to the use of 3 MUXs. One MUX reserved to PSB

Lessons to learn

Neutrality

Competition

Coordination

- ✓ All platforms contribute to SO / must carry rules
- ✓ Role of PSB
- ✓ Progressive coverage [progressive assignments of spectrum or regional approach]
- ✓ Switch off committee to coordinate the path to SO
- ✓ Communication campaigns
- ✓ Regulation should lead to market driven development